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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/873,018 | 06/01/2001 | Mitchell T. Berg | 29820.6 | 3220 |

500 7590 08/11/2006

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| EXAMINER | |
|---|---|
| PATEL, NIKETA I | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2181 | |

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/873,018 | BERG, MITCHELL T. | |
| | Examiner | Art Unit | |
| | Niketa I. Patel | 2181 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *11-24 and 35-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-24 and 35-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/31/05,2/10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/22/2006 has been entered.

### *Specification*

2. The abstract of the disclosure is objected to because the abstract filed on 6/1/01 contains two paragraphs. Per, 37 CFR 1.72(b) and MPEP § 608.01(b), abstract of the disclosure must be a brief narrative of the disclosure as a whole in **a single paragraph** of 150 words or less. Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

a. the status of the related application listed on page 2 of the disclosure must be updated and the serial numbers of each of these applications must be provided.

b. The description of figures 1a and 1b must be removed from the detailed description section and added to the background section, since figure 1a and 1b are prior art figures.

Appropriate correction is required.

4. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11, 13-14, 16-22 and 35, 37-38, 40-46, 49-58, 60, 62-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Aversa et al., "Load Balancing a Cluster of Web Servers, using Distributed Packet Rewriting, Computer Science Department, Boston University" [Cited in Applicant's IDS], (hereinafter '*Aversa*') and further in view of "TCP/IP Illustrated: the protocol, Volume 1" by W. Richard Stevens, Copyright 1994 Addison Wesley Longman, Inc., (hereinafter '*Stevens*'.)

Per, MPEP 2131.01 (B) (C), *Stevens* is sited to explain the meaning of terms 'application layer' and 'serving packet/request locally' used in the primary reference *Aversa* and to show that the characteristic of 'selectively execute a software application associated with the information packet' not disclosed in the *Aversa* reference is inherent.

7. **Referring to claims 11, 35, 55**, *Aversa* teaches an information processing system, a method [figure 2, distributed system and page 3, paragraph 1] and a server farm [see page 3, paragraph 2 – cluster of servers], comprising: a first computing device [see figure 2, element

server 4] configured to: receive an information packet through a global computer network [see page 3, paragraph 2, 'the very first packet received form the client' and figure 2, element 'Internet'] and a first local area network [see page 3, paragraph 2 and figure 2, element 'local network']; and in response to at least the information packet [see page 3, paragraph 2 first packet received from the client] and a state of the information processing system [see page 3, paragraph 2, 'the cluster state information- e.g., relative load on the different servers in the cluster'], when the state of the information processing system is a first state [see page 3, paragraph 2 – using the information in the packet and the state information, a DPR-enabled server either forwards a connection to a different server, or lets it percolate up its network stack to the application layer depending up the load of the server that receives the packet and page 5, full paragraph 3], selectively output the information packet, such that the output information packet bypasses the first local area network [see page 3, paragraph 2 – 'forwarding to different server' and figure 2 shows that during forwarding, use of the local network is avoided and page 2, paragraph 3- 'a TCP router acts as a front-end that forwards requests for Web services to the individual back-end servers of the cluster']; and when the state of the information processing system is a second state [see page 3, paragraph 2 – when the load of the server that receives the packet is not heavy the server will serve the packet locally and page 5, full paragraph 3], selectively execute a software application associated with the information packet [see page 3, paragraphs 2, 3, 'percolate up its network stack to the application layer,' and serving the packet/request locally.]

Although, *Aversa* teaches to serve the information packet/request, received from a client, locally, by sending it to application layer, upon the determination that the load on the local server (a TCP server) is under certain threshold [see page3, paragraph 2 and page 5, full paragraph 3],

*Aversa* is silent on what steps are taken to serve the information packet/request locally. However, this feature is deemed to be inherent to the *Aversa* system as shown by *Stevens*. *Stevens* teaches that in order to serve the information packet/request locally, the step of, selectively execute a software application associated with the information packet must be performed [see page 254, section 18.11 TCP Server Design and page 12, section 1.8 Client-Server Model.] *Stevens* teaches that when a server accepts a connection request, it invokes a new process to handle the new client, depending on the operating system, various techniques are used for this, under Unix the common technique is to create a new process using the *fork* function, at page 254. *Stevens's* section 1.8, teaches that as a general rule the TCP servers are concurrent server and that this type of server will create a new process, task or thread (i.e., a software application associated with the information packet) depending on what the underlying operating system supports to process the client request.

8. **Referring to claims 13, 37**, *Aversa* teaches wherein the received information packet originates from a client [see figure 2, elements 'client A' and 'client B'], and wherein the first local area network [see figure 2, element 'local network'] is coupled to the global computer network to the client [see figure 2, element 'Internet'.]

9. **Referring to claims 14, 38**, *Aversa* teaches wherein the information packet originates from a client [see page 3, paragraph 2 – first packet received from the client], and wherein the first computing device is configured to: in response to at least the information packet [see page 3, paragraph 2 – information included in the SYN packet] and the state of the information processing system [see page 3, paragraph 2 – cluster state information], selectively output the information packet by outputting an encapsulated information packet [see page 5, full paragraph

1 – IP-IP encapsulation], the encapsulated information packet including the information packet and a reference to a data structure of a connection with the client [see page 5, full paragraph 1 – source IP of client B within the encapsulated packet.]

10. **Referring to claims 16, 40**, *Aversa* teaches wherein the first computing device is configured to: in response to at least the information packet and the state of the information processing system, selectively output the information packet to a second computing device for performing an operation in response to the information packet [see page 4, full paragraph 1 – rerouting request to another machine for processing.]

11. **Referring to claims 17, 41**, *Aversa* teaches wherein the information packet originates from a client [see page 3, paragraph 2], wherein the first local area network is coupled to the global computer network to the client [see page 3, paragraph 2 and figure 2], wherein the operation includes outputting a response packet to the client through the first local area network and the global computer network [see page 4, full paragraph 1 – respond directly to the client], and wherein the computing device is configured to: in response to at least the information packet and the state of the information processing system, selectively output the information packet to the second computing device for outputting the response packet to the client, such that the output response packet bypasses the first computing device [see page 4, full paragraph 1 – respond directly to the client and page 4, paragraph 3 and page 5, lines 1-6 – responding to client B.]

12. **Referring to claims 18, 42**, *Aversa* teaches wherein the operation is part of a software application executed by the second computing device [refer to the explanation provided in claim 11 above and see page 3, paragraphs 2, 3, 'percolate up its network stack to the application layer,' and serving the packet/request locally.]

13. **Referring to claims 19, 43**, *Aversa* teaches wherein the software application executed by the second computing device is a socket application [see page 5, paragraph 5 – active sockets and page 6, paragraph 2, active sockets.]

14. **Referring to claims 20, 44**, *Aversa* teaches wherein the information packet is addressed by the client to the first computing device, and wherein the first computing device is configured to receive the information packet from the first local area network in response to the addressing [see page 3, paragraph 2 – IP address.]

15. **Referring to claims 21, 45**, *Aversa* teaches wherein the first computing device is configured to receive at least a portion of the state of the information processing system from the second computing device and a second local area network [see page 6, paragraph 3 – more the one network, load packet.]

16. **Referring to claims 22, 46**, *Aversa* teaches wherein the first local area network includes a hub [see figure 2, element 'server 4'.]

17. **Referring to claims 49, 52**, wherein the first computing device is configured to output the information packet to a second local area network to a second computing device [see page 6, paragraph 3 – more the one network, load packet and page 4, full paragraph 1 – rerouting request to another machine for processing.]

18. **Referring to claims 50, 53**, *Aversa* teaches wherein the first computing device is configured to receive at least a portion of the state of the information processing system from the second computing device and a third local area network [see page 6, paragraph 3 – more the one network, load packet.]

19. **Referring to claims 51, 54**, *Aversa* teaches wherein the state of the information processing system is based at least in part on a state of a second computing device [see page 3, paragraph 2, relative load on the different servers in the cluster.]

20. **Referring to claim 56**, *Aversa* teaches wherein the state of the server farm is based at least in part on a state of the first computing device [see page 3, paragraph 2 – cluster state information.]

21. **Referring to claim 57**, *Aversa* teaches wherein the state of the server farm is based at least in part on a state of the first computing device [see page 3, paragraph 2 – relative load on the different serves in the cluster.]

22. **Referring to 58**, *Aversa* teaches wherein the software application is a socket application [see page 5, paragraph 5 – active sockets and page 6, paragraph 2, active sockets.]

23. **Referring to claim 60**, *Aversa* teaches wherein the first computing device is configured to selectively output the information packet by outputting an encapsulated information packet [see page 5, full paragraph 1 – IP-IP encapsulation], the encapsulated information packet including the information packet and a reference to a connection data structure associated with a client [see page 5, full paragraph 1 – source IP of client B within the encapsulated packet.]

24. **Referring to claim 62,** *Aversa* teaches a computer-readable memory medium storing instructions that, when executed, causes a first computing device [see figure 2, element server 4] of an information processing system to respond to an information packet received through a first local area network [see page 3, paragraph 2 and figure 2, element 'local network'] and a global computer network [see page 3, paragraph 2, 'the very first packet received form the client' and figure 2, element 'Internet'] by: when the information processing system is in first state [see page

3, paragraph 2 – when the load of the server that receives the packet is not heavy the server will serve the packet locally and page 5, full paragraph 3], selectively executing a software application associated with the information packet [see page 3, paragraphs 2, 3, 'percolate up its network stack to the application layer,' and serving the packet/request locally]; and when the information processing system is in a second state [see page 3, paragraph 2 – using the information in the packet and the state information, a DPR-enabled server either forwards a connection to a different server, or lets it percolate up its network stack to the application layer depending up the load of the server that receives the packet and page 5, full paragraph 3], selectively forwarding the information packet such that the forwarded information packet bypasses the first local area network [see page 3, paragraph 2 – 'forwarding to different server' and figure 2 shows that during forwarding, use of the local network is avoided and page 2, paragraph 3- 'a TCP router acts as a front-end that forwards requests for Web services to the individual back-end servers of the cluster'.]

Although, *Aversa* teaches to serve the information packet/request, received from a client, locally, by sending it to application layer, upon the determination that the load on the local server (a TCP server) is under certain threshold [see page3, paragraph 2 and page 5, full paragraph 3], *Aversa* is silent on what steps are taken to serve the information packet/request locally. However, this feature is deemed to be inherent to the *Aversa* system as shown by *Stevens*. *Stevens* teaches that in order to serve the information packet/request locally, the step of, selectively execute a software application associated with the information packet must be performed [see page 254, section 18.11 TCP Server Design and page 12, section 1.8 Client-Server Model.] *Stevens* teaches that when a server accepts a connection request, it invokes a new process to handle the new

client, depending on the operating system, various techniques are used for this, under Unix the common technique is to create a new process using the *fork* function, at page 254. *Stevens's* section 1.8, teaches that as a general rule the TCP servers are concurrent server and that this type of server will create a new process, task or thread (i.e., a software application associated with the information packet) depending on what the underlying operating system supports to process the client request.

25. **Referring to claim 63**, *Aversa* teaches wherein the information packet originates from a client [see figure 2, elements 'client A' and 'client B'] coupled to the global computer network [see figure 2, element 'Internet'.]

26. **Referring to claim 64**, *Aversa* teaches wherein the instruction further causes the first computing device to selectively forward the information packet by encapsulating information packet [see page 5, full paragraph 1 – IP-IP encapsulation], by encapsulating the information packet that includes a reference to a connection data structure associated with the client [see page 5, full paragraph 1 – source IP of client B within the encapsulated packet.]

27. **Referring to claim 65**, *Aversa* teaches wherein the software application is a socket application [see page 5, paragraph 5 – active sockets and page 6, paragraph 2, active sockets.]

28. **Referring to claim 66**, *Aversa* teaches wherein the instructions further causes the first computing device to selectively forward the information packet by forwarding the information packet to a second computing device [see page 3, paragraph 2 – 'forwarding to different server' and figure 2 shows that during forwarding, use of the local network is avoided and page 2, paragraph 3- 'a TCP router acts as a front-end that forwards requests for Web services to the individual back-end servers of the cluster'.]

29. **Referring to claim 67**, *Aversa* teaches wherein the state of the information processing system is based at least in part on a state of the second computing device [see page 3, paragraph 2 – relative load on the different serves in the cluster.]

30. **Referring to claim 68**, *Aversa* teaches wherein the instructions further causes the first computing device to receive state information from a second local area network [see page 3, paragraph 2 – relative load on the different serves in the cluster and page 5, paragraphs 2-3 – load information.]

***Claim Rejections - 35 USC § 103***

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

32. Claims 12, 23-24, 36, 47-48, 59, 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Aversa* and further in view of Yuasa et al. U.S. Patent Number 6,085,238 (hereinafter '*Yuasa*'.)

33. Referring to **claims 12, 36, 59**, *Aversa* teaches a computing device [see figure 2, element server 4] however does not set forth the limitation of wherein the first computing device comprises a network interface card. *Yuasa* discloses a server having a network interface card in order for allowing the server to communicate with a client over a network [see *Yuasa* column 24, lines 37-45 – server with NIC.]

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the server of *Aversa* to be implemented with a network interface card in order for the server to be able to communicate with various client devices connected to the server. It is for this reason that one of ordinary skill in the art would have been motivated to implement *Aversa* server with a network interface card to provide server with communication means to communicate with various network devices connected therewith.

34. Referring to **claims 23, 47**, *Aversa* teaches a TCP router [see page 1, paragraph 3] however, does not set forth the limitation of wherein the first local area network includes a Layer 2 switch, and wherein the Layer 2 switch is coupled to a router device to the global computer network. *Yuasa* discloses the first local area network includes a Layer 2 switch, and wherein the Layer 2 switch is coupled to a router device to the global computer network, in order to improve the line processing capability of each floor line concentrator in addition to speeding up transmission on wiring to enhance traffic throughput and hold the transmission delay time short [see *Yuasa* column 5, lines 14-17.]

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the system of *Aversa* to implement Layer 2 switch in order to improve the line processing capability of each floor line concentrator in addition to speeding up transmission on wiring to enhance traffic throughput and hold the transmission delay time short. It is for this reason that one of ordinary skill in the art would have been motivated to implement *Aversa's* system with Layer 2 switch to enhance traffic throughout and hold the transmission delay time short.

35. Referring to **claims 24, 48, 61**, *Aversa* teaches a TCP router [see page 1, paragraph 3] however, does not set forth the limitation of wherein the first local area network includes a Layer 3 switch, and wherein the Layer 3 switch is coupled to the global computer network *Yuasa* discloses the first local area network includes a Layer 3 switch, and wherein the Layer 3 switch is coupled to a router device to the global computer network, in order to improve the line processing capability of each floor line concentrator in addition to speeding up transmission on wiring to enhance traffic throughput and hold the transmission delay time short [see *Yuasa* column 6, lines 28-35.]

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the system of *Aversa* to implement Layer 3 switch in order to improve the line processing capability of each floor line concentrator in addition to speeding up transmission on wiring to enhance traffic throughput and hold the transmission delay time short. It is for this reason that one of ordinary skill in the art would have been motivated to implement *Aversa's* system with Layer 3 switch to enhance traffic throughout and hold the transmission delay time short.

36. Claims 15, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Aversa* and further in view of RFC 2003 by C. Perkins, IBM, Oct 1996 [sited in applicant's IDS] (hereinafter '*Perkins*'.)

37. Referring to **claims 15, 39**, *Aversa* teaches a use of encapsulation packet [see page 5, full paragraph 1 – IP-IP encapsulation] however does not set forth the limitation of wherein the reference is included within a single header of the encapsulated information packet. *Perkins*

teaches a use of encapsulated packet header to place reference [see page 3, paragraph 2 – the outer IP header source address and destination address] in order to identify the endpoints of the tunnel.

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the system of *Aversa* to be able to identify the endpoints of a tunnel by placing reference in the encapsulated packet header. It is for this reason that one of ordinary skill in the art would have been motivated to implement *Aversa's* encapsulated information packet with a reference within a single header to identify the endpoints of the tunnel.

***Response to Arguments***

38. Applicant's arguments with respect to claims 11-24 and 35-68 are have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Niketa I. Patel whose telephone number is (571) 272 4156. The examiner can normally be reached on M-F 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming can be reached on (571) 272 4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Niketa Patel

Patent Examiner (AU 2181)
08/04/2006